

REMARKS

Applicants, their principle representatives in Germany, and the undersigned have carefully reviewed the first Office Action on the merits of November 26, 2008 in the subject U.S. patent application, together with the prior art cited and relied on by the Examiner in the rejections of the claims. In response, the substitute specification and claims have been amended. It is believed that the claims which are now pending in the subject application are patentable over the prior art cited and relied on, taken either singly or in combination. Reexamination and reconsideration of the application and allowance of the claims is respectfully requested.

The subject invention is directed to a web-fed rotary printing press that is usable to print wide webs of paper and specifically newspapers. The printing press has at least one printing unit that is usable to print at least six axially arranged side-by-side printed pages on a web which is passing through the printing unit.

Once the web has been printed on its six page across configuration, the web is typically slit longitudinally into several partial webs. These partial webs are then arranged on top of each other in a superstructure, by the use of turning bars. The several stacked or superimposed partial webs are then longitudinally formed and folded. Once this has been done, the partial webs are cross-cut and are transversely folded to provide signatures which then are assembled to arrive at newspaper sections.

In accordance with the present invention, as is recited in currently amended claim 48, the folding apparatus includes a transport cylinder, a cutting cylinder and a folding jaw cylinder. It is appreciated that the substitute specification of the subject application is quite lengthy and that there are numerous sheets of drawings. It is believed that the following discussion will aid the Examiner in his understanding of the structure and operation of the subject invention.

As may be seen most clearly in Fig. 21, the plurality of partial, longitudinally formed and folded partial webs 109, 111, 112, 113, 114 and 116 enter the folding apparatus, generally at 12. These partial webs have, as was discussed above, already been printed in a six page wide printing unit and have been slit longitudinally into the plurality of partial webs.

A cutting cylinder, generally at 127', is provided with four equidistantly located cutters, each identified at 128 in Fig. 21. The benefits provided by the provision of four such cutters 128 on the cutting blade cylinder 127' is set forth at paragraph 025 of the substitute specification. Contrary to the assertion made in the Office Action, the purpose of a four cutter cutting cylinder is not to allow the cutting cylinder "...to revolve slower and more safely while producing the same amount of work." As set forth at paragraph 025, the provision of a four cutter cutting cylinder provides for much less tilting of the cutter knives in the cutting groove slots that are provided in the cooperating transport cylinder. The use of a four cutter cutting cylinder also allows for the use of larger bearings, a large cylinder journal and a more robust design of the cutting cylinder itself. This increases the stability of the cutting cylinder. Thicker products, with more layers, can be cut more cleanly and accurately.

The cutting cylinder cooperates directly with a transport cylinder, which is identified in Fig. 21 as cylinder 23. As recited in currently amended claim 48, the transport cylinder has at least seven transport cylinder sections on its circumference. Each of these transport cylinder sections is adapted to receive one web section of the web which is being printed. These at least seven transport cylinder sections are arranged one after the other in the circumferential direction of the transport cylinder.

It is to be noted that the folding apparatus in accordance with the present inventions, is intended to operate in collect production. As is well known in the art, in such collect production,

each transport cylinder section will receive plural layers of the longitudinally and transversely cut partial webs during each rotation of the transport cylinder. Grippers on the transport cylinder grasp the leading ends of the accumulating layers of cut web sections, as they are severed by the cutting blades. It is very important that the cutter cylinder's at least four cutters engage the partial webs to be severed at a direction which is essentially radial with respect to the transport cylinder. This is the reason for the provision of the at least four cutters on the cutting cylinder.

Each of the transport cylinder sections is provided with a folding blade. One such folding blade is depicted schematically at 130 in Fig. 21. It is the purpose of the folding blades to periodically extend radially outwardly in each folding blade's associated one of the transport cylinder sections and to cooperate with folding jaws that are provided in a coacting folding jaw cylinder, indicated generally at 132 in Fig. 21.

The folding jaw cylinder 132 also has at least seven folding jaw cylinder sections, each of which is provided with a folding jaw assembly. Each one of these folding jaw sections is adapted to cooperate with an associated one of the folding blades which are provided on the transport cylinder. In the production of thick folded products, as is often required in the formation of newspapers, each one of the folding jaw assemblies must be suitable for grasping and transversely folding a thick product that may have upwards of 96 pages. The Examiner is requested to review the discussions at paragraphs 131, 138 and 149 in the context of the use of the folding apparatus, in accordance with the present invention, to produce thick folded products having as many as 144 pages.

A common rotary drive motor is provided for rotating the cutting cylinder, the transport cylinder and the folding jaw cylinder. Such a common rotary drive motor is depicted schematically at 136 in Fig. 20. The Examiner is requested to review the discussion at paragraph

147 of the substitute specification for a discussion of the location and function of this common rotary drive motor 136. This drive is mechanically independent of the other drives of the printing machine. A benefit of this separate drive arrangement is to isolate the folding assembly from vibrations which might otherwise be imparted to it from the drives of the printing machines. Such vibrations would have a detrimental effect on the quality of the resultant signatures. Specifically, the cut edges formed by the four cutter blades on the cutting cylinder would not be properly aligned and would possibly result in the formation of newspaper sections with uneven edges.

In the Office Action of November 26, 2008, claims 59, 89 and 90 were objected to as depending on cancelled claim 49. As was discussed by telephone with Examiner Banh, it was agreed that those claims should depend on claim 48. Claim 59 has now been cancelled. Claims 89 and 92 now depend from believed allowable independent claim 48. It is believed that the Examiner's objection to claim 90 should have been directed to claim 92. Claim 90, which is currently withdrawn, depended from, and still depends from claim 48. Claim 92 initially depended from cancelled claim 49.

The withdrawal of claims 50-58, 60, 61, 65-88, 90 and 91 from consideration is noted. Those claims remain withdrawn from consideration pending the allowance of independent claim 48, which is believed to link all of those claims. Several of the withdrawn claims have been amended to conform their language to that of independent claim 48, as currently amended.

Claims 48, 59 and 89 were rejected under 35 USC 103(a) as being unpatentable over US Patent No 5,503,379 to Michalik in view of US Patent No 5,622,113 to Hansen. Claims 62-64 were rejected under 35 USC 103(a) as being unpatentable over Michalik in view of Hansen and further in view of US Patent No 5,676,056 to Stein. Claim 92 was rejected under 35 USC 103(a)

as being unpatentable over Michalik in view of Hansen and further in view of US Patent No 4,158,417 to Inoue. For the reasons to be set forth subsequently, it is believed that the subject invention, as set forth in currently amended claim 48 is patentable over the combination of prior art cited and relied on by the inventor.

With respect to claim 48, it was asserted in the Office Action that Michalik shows a transport cylinder 9 with at least seven web sections, a folding jaw cylinder 11 and a cutting cylinder 8, Michalik is admitted as not showing a six page wide printing unit. It is also to be noted that the cutting cylinder 8 of Michalik is a two blade or two cutter cylinder, not a four cutter cylinder, as recited in claim 48.

Hansen is cited as teaching a six wide printing unit and as also teaching a cutting cylinder 12 comprising at least four cutters 18, as depicted in Fig. 1 thereof. It is asserted, in the rejection of claim 48, that it would be obvious to one of skill in the art to combine the Hansen teachings of a six page wide press and of a four cutter cutting cylinder, with the Michalik devices to arrive at the subject invention. The undersigned respectfully disagrees.

In the printing industry, there are two distinct types of folding devices. The first, as shown in the subject invention, and as depicted in the Michalik reference, are folding blade/folding jaw cylinders. In such devices, a cutting cylinder cooperates with a transport cylinder to cut the webs transversely into web segments. Those web segments are held on the surface of the transport cylinder as they are transported around to a cooperating folding jaw cylinder. Folding blades on the transport cylinder then push the midpoint of each web section radially away from the transport cylinder and into a gap formed by open folding jaws on the folding jaw cylinder. That folding jaw cylinder then carries the now transversely folded signatures to a delivery wheel or a paddle wheel. Such a delivery wheel or paddle wheel can be

seen at 133 in Fig. 21 of the subject application.

The other type of folding apparatus is a gear folder. Such a jaw folder can be seen, for example in prior US Patent No 3,540,723 to Bolza-Schunemann, and which is assigned to the assignee of the present application. Gear folders have a very distinct operating sequence, which is not the same as the operating sequence of blade folders, such as shown in the subject invention and in the Michalik reference. In a gear folder, as seen in the '723 document, a web is cut as it passes between a cutting blade cylinder 7 and a cooperating gripper cylinder 8. The cut web segments are then delivered to an intermediate cylinder 11 and ultimately to a gear folding cylinder. In the '723 reference, there are shown two such gear folding cylinders at 14 and 15. Each of these gear folding cylinders has a multi-lobed folding blade that is rotatable about an axis which is offset from the axis of rotation of its associated cylinder. A lobe of the folding blade periodically extends from the periphery of the gear folding cylinder and pushes the web section or sections into a nip formed between a pair of folding rollers 19 or 20, respectively. Gear folders are so named because of their use of gear drives to cause the multi-lobed blade folder to rotate at a speed different from the speed of rotation of the associated cylinder which carries it.

Folding blade/folding jaw assemblies and gear folders are two distinct types of equipment. While they both accomplish the transverse folding of a web section, they accomplish that result in very different ways. In the gear folders, the cutting blade cylinder does not cooperate with the transport cylinder which is provided with folding blades. In gear folders, there is no folding jaw cylinder that cooperates with a transport cylinder provided with folding blades. The principles of operation of the two types of folders are not the same. The structures of the two types of folders are not the same. It would not be obvious to one of skill in the art to

combine features of these two diverse devices with each other. Such a combination would be a typical apples and oranges scenario.

The secondary reference to Hansen, US Patent No 5,622,113 is directed to a gear folder. It is thus similar in operation to the gear folder shown in the Bolza-Schunemann patent, as discussed above. In Hansen, a cutting cylinder 12, which is provided with four cutting knives 18, cuts a web 16 as that web passes between the cutting cylinder 12 and a cooperating anvil cylinder 14. The cut web sections are not retained on the anvil cylinder 14. That anvil cylinder 14 is not provided with any sheet grippers and is clearly not provided with any folding blades. It also does not have a number of sections that is greater than the number of blades on the cutting cylinder. It would not be obvious to one of skill in the art to arbitrarily select a cutting cylinder, as shown in the Hansen gear folder and to combine it with a completely different folding apparatus, as shown in the Michalik device. The assertion that such a combination would be obvious, to allow the cutting cylinder "...to revolve slower and more safely..." is not the reason for the use of the four cutter cutting cylinder, as discussed above. A folding blade/folding jaw folder is not the same as, or similar to a gear folder. There is no support for the assertion, in the Office Action, of the combinability of these diverse devices.

Claim 59 was rejected based on an assertion that Michalik teaches the transport cylinder, cutting cylinder and folding jaw cylinder as being driven by a common single drive motor, as allegedly is recited in column 3, lines 50-52 of Michalik. A careful reading of that reference makes it clear that the assertion in the Office Action is not correct.

In the Michalik device, there is shown a folding device that includes shiftable formers. The Michalik device uses a two section cutting cylinder 8, in combination with a seven section folding blade cylinder 9 and a seven section folding jaw cylinder 11. As may be seen quite

clearly in Fig. 2, these cylinders are all double width cylinders. They each have a width, or axial length that is greater than twice the width of the formed and folded webs. Two separate delivery paddle wheels 12 and 13 are situated beneath the double wide folding jaw cylinder 11. It is specifically noted at column 2, line 16 the device is a double wide transverse folder. Lines 25 and 26 of column 2 recite that it is possible to produce both first and second transversely folded products at the same time.

As is well known in the art, folding blade cylinders and folding jaw cylinders have components that must move during the operation of these cylinders. The folding blade cylinder has sheet leading end grippers and has radially movable folding blades. The folding jaw cylinder has folding jaw assemblies each of which has to open and close at the appropriate time. These moving mechanisms all require some type of drive assembly.

In the double wide transverse folder of the Michalik device, there are provided essentially a double width folding blade cylinder and a double width folding jaw cylinder. As recited at column 3, line 46-52 "...it is possible to dispose two devices, such as cutting blades, folding blades or folding jaws in the axial direction of each cylinder 8, 9 or 11 and to provide them with one drive element...". The "them" of this phrase refers to the cutting blades, folding blades or folding jaws that are located in each of the double width cylinders. It does not, as asserted in the Office Action, refer to one drive element for the three cylinders themselves. Thus, the limitations of claim 59, which have now been included in currently amended, independent claim 48, are not shown or suggested in the prior art Michalik device.

The several other secondary references, which were relied on to show features recited in ones of the dependent claims, have been reviewed. These secondary references do not teach, or suggest the structure of the subject invention, as set forth in currently amended claim 48.

During a review of the substitute specification, in the course of the preparation of the subject amendment, a minor typographical error was noted at paragraph 138. That error has been corrected without the addition of any new matter.

The various other references cited in the Office Action of November 26, 2008 have been noted. Since they were not relied on by the Examiner in the rejections of the claims, no further discussion thereof is believed to be required.

SUMMARY

The substitute specification has been amended without the addition of new matter, to correct a typographical error. Independent claim 48 and several of the dependent claims have been amended. Various others of the claims remain withdrawn pending the indication of the allowability of linking independent claim 48. Allowance of the claims, and passage of the application to issue, is respectfully requested.

Respectfully submitted,

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